APPENDIX G

HORIZONTAL DIRECTIONAL DRILL PLAN

North Baja Pipeline, LLC

NORTH BAJA PIPELINE EXPANSION PROJECT

Appendix G
Horizontal Directional Drill Plan

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1.0 INTRODUCTION

North Baja Pipeline, LLC (North Baja), will construct the North Baja Pipeline Expansion Project (Project), a new natural gas pipeline from the U.S.-Mexico border to the existing North Baja facilities and the El Paso Natural Gas system in Ehrenberg, Arizona. The Project includes three elements: the B-Line, which includes interconnection facilities in Ehrenberg, Arizona, as well as a 79.8-mile, 42- and 48-inch-diameter pipeline between Blythe and the Mexican border; the Arrowhead Extension, which includes a meter station and a 2.1-mile, 36-inch-diameter pipeline extending from the proposed B-Line at milepost 7.4 to Southern California Gas Company's existing Blythe Compressor Station; and the Imperial Irrigation District (IID) Lateral, a 45.7-mile, 16-inch-diameter pipeline between North Baja's mainline and the IID El Centro Generating Station. The Project will be constructed in phases, with the first phase planned for construction in 2007, the IID Lateral for 2008, and the final phase of the Project in 2009, pending completion of upstream liquefied natural gas (LNG) terminal facilities.

This directional drill contingency plan provides specific procedures and steps to contain inadvertent releases of drilling mud (also referred to as frac-outs) for waterbodies that are crossed using horizontal directional drilling (HDD) techniques. As part of its North Baja Pipeline Expansion Project, North Baja proposes to directionally drill the Colorado River and the All-American Canal on the B-Line, and on the IID Lateral, North Baja proposes to directionally drill two crossings of the All-American Canal and a crossing of the East Highline Canal. While waterway crossings vary substantially in installation depth, current profile data indicate a minimum depth of cover of 60 feet for the Colorado River crossing, 30 feet for the All-American Canal crossings, and 30 feet for the East Highline Canal crossing. Pipe used for the directionally drilled crossings on the B-Line will be 48 inches in diameter for the All-American Canal and 42 inches for the Colorado River. Pipe used for the directionally drilled crossings of the IID Lateral will be 16 inches in diameter.

2.0 HORIZONTAL DIRECTIONAL DRILLING PROCESS

Installation of a pipeline by HDD is generally accomplished in three stages. The first stage consists of directionally drilling a small-diameter pilot hole along a pre-determined path. The second stage enlarges this pilot hole to a diameter that will accommodate the pipeline. Numerous “reaming” passes will be necessary with each pass enlarging the diameter of the pilot hole incrementally. The third stage involves pulling the pipeline through the enlarged hole.

During the drilling of the pilot hole, directional control is achieved by using a non-rotating drill string with an asymmetrical leading edge. The asymmetry of the leading edge creates a steering bias, which allows the operator to control the direction of the drill bit. The actual path of the pilot hole is monitored during drilling by taking periodic readings of the inclination and azimuth. These readings are used to calculate the horizontal and vertical coordinates along the pilot holes relative to the initial entry point on the surface.

Once the pilot hole is complete, it is enlarged using reaming tools that are often custom-made for a particular diameter pipe or type of soil. The reamers are typically attached to the drill string at the exit point and are rotated and drawn to the drilling rig, thus enlarging the pilot hole with each pass. Pipe installation is accomplished by attaching a prefabricated pull section behind a reaming assembly at the exit point and pulling the entire assembly back to the drilling rig. When the pipe is in place beneath the river, tie-in welds on the river/stream banks complete the crossing.

Ideally, horizontal directional drilling involves no disturbance to the bed or banks of a stream. However, it is possible that geologic irregularities could be encountered during drilling, and drilling could fail. This plan describes the potential for failure of horizontal directional drilling, the contingency methods that would be implemented in the event of inadvertent release of drilling fluids to water or land, and drill hole abandonment procedures.

The feasibility of the horizontal directional drill method primarily depends on the local geologic setting, as well as site topography and other surface features. For example, horizontal directional drilling may not be feasible in areas of glacial till or outwash interspersed with boulders and cobbles, highly fractured bedrock, or non-cohesive coarse sands and gravels. These formations increase the likelihood that drilling could fail due to refusal of the drill bit, continuous loss of drilling fluid through fractures or weak areas in the ground, or collapse of the bore hole in non-cohesive, unstable substrate. Steep terrain immediately adjacent to the crossing location or other surface features can also render the HDD method impossible or increase the risk of failure.

Fortunately, surface characteristics at the proposed Project drill sites are generally favorable for HDD. North Baja previously obtained soil borings from each side of the Colorado River and All-American Canal crossings on the B-Line and successfully completed HDDs at both locations in

2002. This work indicates that conditions are favorable for horizontal directional drilling. Geotechnical investigations for the IID Lateral crossings will be conducted in the spring of 2006.

While the borings can provide a general basis for determining feasibility, they cannot predict all problems that could occur. Even the previous successful drills on the original North Baja Pipeline Project cannot be used to predict with absolute certainty the results for an adjacent drill.

3.0 MONITORING PROCEDURES

The Environmental Inspector(s) and construction personnel will continuously monitor operations during drilling activities. Monitoring activities will include:

- Visual inspection along the drill path, including monitoring the waterbody for evidence of a release.
- Continuous examination of drilling fluid pressures and returns flows.

4.0 NOTIFICATION PROCEDURES

If in the course of an inspection an inadvertent release is discovered, steps will be taken by construction personnel to contain the release as described in Section 5.0, Corrective Action and Cleanup. Notification procedures of North Baja construction management personnel and regulatory agencies are detailed in this section.

If monitoring indicates an in-stream release, the Environmental Inspector(s) will immediately notify North Baja's construction management personnel. North Baja will notify the appropriate Federal and State agencies as soon as possible by telephone and/or facsimile of an in-stream release event, detailing the nature of the release and corrective actions being taken. The notified agencies will determine whether additional measures need to be implemented. If it is determined that the release can not be remedied without causing additional environmental impact, North Baja will request agency approval to continue the drilling operations.

If a release occurs that may migrate downstream and affect water quality, downstream water users will be contacted by North Baja. The contacts and telephone numbers of downstream users will be assembled prior to commencement of construction, and maintained on site.

5.0 CORRECTIVE ACTION AND CLEANUP

By monitoring drilling operations continuously, North Baja intends to correct problems before they occur. In addition, containment equipment including earth-moving equipment, portable pumps, hand tools, sand, hay bales, silt fence, lumber, and a suction dredge will be readily available at the drill site. If a release does occur, the following measures will be implemented to stop or minimize the release and to clean it up:

- The drilling contractor will decide what modifications to make to the drilling technique or composition of drilling fluid (*e.g.,* thickening of fluid by increasing bentonite content) to reduce or stop minor losses of drilling fluid.
- If a minor bore path void is encountered during drilling, making a slight change in the direction of the bore path may avoid loss of circulation.
- If the bore head becomes lodged resulting in loss of drilling pressure, the borehole may be sized by moving the bore head back and forth to dislodge the stuck materials.
- If necessary, drilling operations will be reduced to assess the extent of the release and to implement other possible corrective actions.
- If public health and safety are threatened, drilling fluid circulation pumps will be turned off. This measure will be taken as a last resort because it increases the potential for drill hole collapse resulting from loss of down-hole pressure.
- If a land release is detected, the drilling crew will take immediate corrective action to contain the release and to prevent migration off site.
- The contractor will construct pits and berms around the borehole entry point to contain inadvertent releases onto the ground.
- Any drilling mud released into the pits will be pumped by contractor personnel into a mud-processing unit for recycling of drilling fluid and separation of cuttings.
- Additional berms will be constructed around the bore pit as directed by the Environmental Inspector(s) to prevent release materials from flowing into the waterbody.
- If the amount of an on-land release does not allow practical collection, the affected area will be diluted with fresh water and allowed to dry. Steps will be taken (such as berm, silt fence, and/or hay bale installation) to prevent silt-laden water from flowing into the waterbody.
- If hand tools cannot contain a small on-land release, small collection sumps (less than 5 cubic yards) may be constructed to pump the released material into the mud processing system.
- Contractor HDD crews will immediately implement non-mechanized measures to contain the spread of drilling fluids, including the installation of hay bales or silt fence.

- Sump pumps or vac trucks will be used to remove and dispose of any drilling fluids.
- Time permitting; HDD crews will await the arrival of CDFG representatives before proceeding with mechanized measures to contain the spread of drilling fluids. This could include construction of a containment berm.
- Any activities outside the approved right-of-way or extra workspace will be surveyed by a qualified biologist.

6.0 ABANDONMENT

If corrective actions do not prevent or control releases from occurring into the waterbody, North Baja may opt to re-drill the hole along a different alignment or suspend the Project altogether. In either case, the following procedures will be implemented to abandon the drill hole.

- The method for sealing the abandoned drill hole is to pump thickened drilling fluid into the hole as the drill assembly is extracted, and using cement grout to make a cap.
- Closer to the surface of the hole(s) (within approximately 10 feet of the surface), a soil cap will be installed by filling with soil extracted during construction of the pit and berms.
- The bore hole entry location will be graded by the contractor to its original grade and condition after the drill hole has been abandoned.

7.0 SITE-SPECIFIC PLANS

After contracting with an HDD contractor and prior to initiating HHD operations, North Baja will prepare a site-specific HDD Drilling Plan for The Colorado River and each canal HDD crossing. The plan will be similar to the plan prepared for the A-Line in 2002. The Plan will be submitted to the CDFG and will address:

A. HHD Operations Description:

1. Construction drawing
2. Depth of bore, assessment of streambed and frac-out risk
3. Type and size of boring equipment to be used (*e.g.,* mini, mid, or maxi)
4. Estimated time to complete bore
5. List of lubricants and muds to be used (MSDS sheets okay)
6. Name of contractor and cell phone numbers of construction supervisor and monitor

   Project Coordinator

   Construction Supervisor

   Crew Monitor

B. Frac-Out Prevention and Cleanup Plans Will Include:

1. Name(s) of environmental and biological monitor(s)
2. Site-specific monitoring conditions (*e.g.,* preconstruction surveys for sensitive species)
3. Monitoring protocols, including biological monitoring and frac-out monitoring (North Baja will have Biological Monitors on-site during HDD activities.)

   Frac-Out Monitoring

   General Monitoring

4. Containment and cleanup plan (include staging location of vacuum trucks and equipment, equipment list, necessary hose lengths, special measures needed for steep topography, etc.)

   Planning and Set Up

   Operation

   Spill Protocol